Louisiana CAT

2015 TECHNICAL TRAINING CATALOG

The key to being better every day is found in Learning…

Revised November 20, 2014

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TRAINING FACILITIES

It should be noted that the training department will make a location transition from the Lafayette facility to our New Iberia complex in early 2015. The facility will further enhance the learning & development experience for our students by using state of the art educational devices both in the classroom and the lab. We will include the location name in the confirmation of enrollment letter you will receive upon registration. If there are any questions or comments, please feel free to contact the Training Department at your earliest convenience.

Louisiana Cat
6111 Port Rd
New Iberia, LA 70560
Phone: (337) 374-1901
Fax: (337) 374-1914

Louisiana Cat
100 Boyce Dr., Hwy 90 East
Lafayette, LA 70518
Phone: (337) 837-2476
Fax: (337) 837-1486

Louisiana Cat
9648 Hwy 182 East
Morgan City, LA 70380
Phone: (985) 631-0561
Fax: (985) 631-0567

CORPORATE OFFICE

Louisiana Cat
3799 W. Airline Hwy.
Reserve, LA 70084
Phone: (985) 536-1121
Fax: (985) 536-4549

REGISTRATION **Training@LouisianaCat.com**
Phone: (985) 536-0494
Fax: (985) 536-0947

CLASS SCHEDULES

Upon request, Louisiana Cat will assist each customer in scheduling their requested classes. The current class schedule is posted on our company website at www.LouisianaCat.com. Training information can be found under the heading Parts and Services or click on the training solutions icon. Then, go to Technician Training to find the 2015 Technician Training Schedule.

ENROLLMENT

For schedule or enrollment inquiries please call our Training Coordinator:

Lacey Volion
Phone: (985) 536-0494
Fax: (985) 536-0947
Training@LouisianaCat.com

A completed Training Enrollment Form is required per participant. The enrollment form can be found on our company website as well as on page 5 of this catalog. The completed enrollment form should be sent to Training@LouisianaCat.com.

CUSTOMER FEES

Class Fees are listed next to each course under the available classes section.

A cancellation fee applies if notification is not provided in advance of one week prior to the scheduled class date. This late cancellation fee is $250.00 per participant. If the participant fails to provide advance notification of enrollment cancellation, the full class fee is due at this time. If Louisiana Cat cancels the class for any reason, no fee will be charged.

2015 TRAINING ENROLLMENT FORM

*Technician Name: _____

*Technician Email Address: _____

*Course Title: _____

*Course Date: _____

*Company: _____

*Contact Name: _____

*Contact Phone Number/Email: _____

*Purchase Order Number: _____

*Authorized Signature: _____

**Required for confirmation of enrollment*

Forward all training enrollments to:

Training@LouisianaCat.com
(985) 536-0494 Tel
(985) 536-0947 Fax

- Lodging, meals, and transportation are not included.
- Louisiana Cat reserves the right to cancel any class at their discretion if fewer than four (4) participants are enrolled.

Cancellation Fees Apply

A cancellation fee applies if notification is not provided in advance of one week prior to the scheduled class date. This late cancellation fee is $250.00 per participant. If the participant fails to provide advance notification of enrollment cancellation, the full class fee is due at this time. If Louisiana Cat cancels the class for any reason, no fee will be charged.

Safety Equipment/Proper Attire

Participants must bring approved safety glasses with side shields and wear safety shoes. Classes involve hands-on lab activities, and suitable attire is required; short pants, sleeveless shirts and canvas tennis shoes are not allowed. Participants dressed inappropriately will not be able to participate in exercises, and will not receive qualification credentials. No reimbursement will be given for class costs.

Dealer Performance Center (DPC)

DPC is our online training website that allows you to experience easy to use engaging videos and interactive training, all with the click of a mouse. Thousands of online courses are available 24 hours a day, 7 days a week and are also available in various languages. We suggest you take our prerequisite classes online to increase the value of your training.

An added benefit of the DPC is that course attendees are also enrolled in the Customer Campus of the Caterpillar online Dealer Performance Center system. The Customer Campus has more than 140 online technical courses that are available 24/7. The $300 online DPC subscription is good for an entire year.

Caterpillar Certified Courses

Louisiana Cat uses the Caterpillar Dealer Performance Center (DPC) to register course attendees into the Caterpillar certified courses. There is a $300 subscription fee for the twelve-month online DPC subscription. Caterpillar requires that all students enrolled in Caterpillar certified courses be enrolled using the Caterpillar DPC registration system. Caterpillar non-certified courses do not require DPC registration. After each successful class completion, students are given a “Certificate of Completion”.

How It Works

- A subscription is required to access DPC
- Subscriptions can be purchased per individual user
- Individual subscriptions are valid for one year from the date of purchase
- The DPC Administrator has the capability to grant subscriptions to dealer employees and customers
- The DPC Administrator is also responsible for providing dealer learners access to DPC campuses, which gives the learner access to a number of web-based courses
- Contact our DPC Administrator for questions regarding gaining access to DPC

STAFF

Robert Guillory
Oil/Gas, Marine, Power Generation
Instructor

Randy Hendrickson
Oil/Gas, Marine, Fuel Systems
Instructor

George Yates
Electrical, Machine, Transportation
Instructor/TC

Eric Dupuis
Marine Instructor

Julius Persons
Transportation, Machine
Instructor

Glen Stafford
Oil/Gas, Electrical
Instructor

Boyd LeJeune
Director of Training

With an average of over 27+ years of experience both in the field and the classroom, our talented staff of instructors can provide a comprehensive and interactive learning experience that will greatly enhance the student's competency development in order to meet your strategic goals. To help us maintain the level of quality our customers have learned to expect, we have invested in the expansion of our training center in New Iberia with the latest smart boards and learning aids. By combining our in-depth, expert led courses with labs and challenging, in-class activities our student's will receive the best tools available to develop their optimal performance. We believe that our learning program will be a key factor in safely attaining proficiency and profitability for your team. We will do this by our commitment to quality assurance of our courses and our team of student focused instructors.

ELECTRONICS TROUBLESHOOTING I*

Objectives:

Upon successful completion of this course, the technician will be able to demonstrate their ability to: Assemble electrical circuits on a training aid and measure electrical circuits using a DMM. Identify basic components and apply Ohms Law to solve unknown circuit values. Identify and service connectors. Diagnose basic circuit faults. Navigate and interpret schematics. Successfully flash an ECM using ET. Identify inputs and outputs and measure their signals. Explain pull-up voltage and its function in a circuit. Use service resources to correctly troubleshoot diagnostic codes and diagnose input/output faults. Use service resources to correctly diagnose battery, starter, and alternator faults. Identify safety concerns related to electrical energy for the prevention of accidental exposure, equipment damage and injury. Upon completion, the participant will be able to:

- Identify types of electrical circuits: series, parallel and series/parallel
- Review and use the information within Ugly's electrical handbook
- Utilize Ohm's Law, measure and calculate I, E and R in electrical circuits
- Repair wiring harness utilizing Caterpillar wiring and terminal repair kits
- Identify the effects of opens and/or unwanted path to ground within a circuit
- Identify operation and maintenance concerns that shorten battery life and perform maintenance procedures that do not shorten battery life
- Explain the importance of proper electrolyte concentrations
- Measure a battery's level of charge and properly recharge the battery without shortening its operational life
- Explain the sign wave signal produced within the alternator and how the signal is transformed into dc voltage
- Measure current draw at various starting system circuits and compare to specification for diagnosing system faults
- Assemble electrical circuits on a training aid & measure electrical circuits using DMM
- Identify basic components & apply Ohm's Law to solve unknown circuit valves
- Diagnose basic circuit faults
- Identify inputs and outputs and measure their signals
- Navigate and interpret schematics
- Use service resources to correctly diagnose battery, starter & alternator faults
- Successfully flash an ECM using ET

Duration: 4 1/2 days
Fee: $2,100.00 per participant

* **Caterpillar Certified Course, DPC Registration Required**

Pre-Requisites Required - Web based classes available in DPC

DPC Course Number 40113 – ELE CO1 - Key features of Electricity
DPC Course Number 40114 – ELE CO2 – Electrical Schematics
DPC Course Number 40115 – ELE CO3 – Measuring Electrical Circuits
DPC Course Number 40013 – ELE CO4 – Electrical Circuit Types
DPC Course Number 40017 – ELE C05 - Electrical Circuit Faults
DPC Course Number 40016 – ELE C06 – Wire Connectors
DPC Course Number 40015 – ELE C07 - Wire Types, Terminals and Harnesses
DPC Course Number 40013 – ELE C08 - Circuit Devices
DPC Course Number 40014 – ELE C09 - Circuit Protection Devices
DPC Course Number 40028 – ELE C10 - Electrical Motors
DPC Course Number 40012 – ELE C11 - Semi-Conductors
DPC Course Number 40019 – ELE C12.1 - Electrical Circuit Inputs: Switches
DPC Course Number 40029 – ELE C12.2 - Position Sensors
DPC Course Number 40042 – ELE C12.3 - Electrical Circuit Inputs: Temp.& Pressure Sensors
DPC Course Number 40030 – ELE C12.4 - Electrical Circuit Inputs: Speed/Timing Sensors
DPC Course Number 40031 – ELE C13 - Circuit Processors
DPC Course Number 40027 – ELE C14 - Circuit Outputs: Components
DPC Course Number 40026 – ELE C15 – Battery Systems
DPC Course Number 40041 – ELE C16 – Starting Systems
DPC Course Number 40062 – ELE C17 – Charging Systems

ELECTRONIC SENSORS & CONTROL LOGICS

Objectives:

This course is an in-depth study of effective techniques utilized for troubleshooting Caterpillar electronic engine control systems. The course covers electronic components and their functions for all electronic systems. It teaches the use of the diagnostic tooling required to troubleshoot and repair electronic engine systems, basic troubleshooting techniques, and basic control logics. Engines covered include 3116, 3126 HEUI, 3176/3176B, C-10, C-12, C-15 and 3406 B/C/E. Upon completion, the participant will be able to:

- Recognize engine components and understand their functions
- Recognize and use service and diagnostic tooling (Service Technician Workbench, ET, Flash)
- Obtain factory passwords
- Establish program parameters
- Calibrate and adjust electronic engine components
- Troubleshoot electronic systems, differentiating electrical hardware and harness problems from electronics
- Describe the troubleshooting process
- Troubleshoot and repair electronic engine control systems.
- Diagnose and repair intermittent problems
- Isolate mechanical, OEM and perceived problems
- Demonstrate a working knowledge of
    - Service Information System (SIS)
    - Electronic Technician (ET)
    - Flash procedures
- Use Cat Tooling to repair any harness problems

Duration: 4 ½ days
Fee: $2,400.00 per participant

Prerequisite - Instructor Led Course

Electronics Troubleshooting I

PL1000 SERIES COMMUNICATION MODULES

Objectives:

This course prepares service personnel to install, support and troubleshoot the hardware used in next generation Product Link. This includes the PL1000E and PL1000T based systems. The course combines technical background on components, installation, and configuration with hands-on lab exercises that develop and reinforce skills with both Cat ET and Vision Link. Upon completion, the participant will be able to:

- Features overview and description
- Configuration and setup
- Wiring interface
- Diagnostic and troubleshooting
- User configurable parameter translation
- Cat Data Link (CDL) to a Modbus interface

Duration: 3 ½ days
Fee: $1,200.00 per participant

Prerequisites - Instructor Led Courses

Electronic Sensors and Control Logics

HYDRAULICS TROUBLESHOOTING

Objectives:

This course is designed to familiarize the participant with basic hydraulics tests and inspection techniques required to demonstrate diagnostic procedures with hydraulic concerns. Upon completion, the participant will be able to:

- Outline the safety procedures to follow when working or checking high-pressure hydraulics
- Identify hydraulic symbols relating to Cat products
- Explain how to use a hydraulic schematic, to understand graphic symbols and how they are used in the make-up of a hydraulic schematic
- Explain the fundamental principles of pressure and flow, describe the operation of basic hydraulic components and explain how these components are combined to do their many jobs

Duration: 4 ½ days
Fee: $1,500.00 per participant

Suggested Self Study - Web based classes available in DPC

DPC course number 20323 - Hydraulic System Fundamentals

Prerequisites - Instructor Led Courses

Electronics Troubleshooting I
Electronic Sensors and Control Logics

POWERTRAIN TROUBLESHOOTING

Objectives:

This course covers basic powertrain theory, studying the various components used in Caterpillar equipment. The topics include, but are not limited to, the transmissions and differentials, torque converters, final drives and axles. Upon completion, the participant will be able to:

- Identify powertrain components
- Discuss system operations and component functions
- Locate pressure testing ports and specifications
- Demonstrate safety procedures for working on or checking powertrain systems included

Duration: 4 ½ days
Fee: $1,500.00 per participant

Prerequisites - Instructor Led Courses

Electronics Troubleshooting I
Electronic Sensors and Control Logics
Hydraulics Troubleshooting

AIR CONDITIONING TROUBLESHOOTING

Objectives:

This course is designed to introduce the technician to the basic principles and theories of air conditioning in relation to Caterpillar equipment. Upon completion, the participant will be able to:

- Understand basic fundamentals of AC systems, identification of system components and component functions
- Utilize tooling to inspect and test operating air conditioner system on various Caterpillar machines
- Understand governmental laws, safety and handling concerns of air conditioning refrigerant
- Perform the efficient process for refrigerant recovery and charging of an air conditioner system
- Effectively execute charging and recharging of the air conditioning system

Duration: 3 ½ days
Fee: $1,500.00 per participant

FUEL SYSTEMS TROUBLESHOOTING

Objectives:

This course is an in-depth study of Caterpillar fuel systems for 3114, 3116, 3126, C7 & C9 series engines and the C10/C12, C15 and 3400 series engines. Participants learn fuel system disassembly and assembly procedures. Participants study Caterpillar pumps, governors, timing advance units, unit injectors and nozzles. Upon completion, the participant will be able to:

- Explain the operating principals of the 3116, 3126, C-7, C-9 unit injector, Hydraulically Actuated Electronically Controlled Unit Injection (HEUI), and ACERT technology
- Explain the operation of current and new scroll fuel systems 3406, 3400-V
- Explain the operation of the C/10/12, 3406E, C15, 3400-V High performance, and 3400 HEUI fuel systems and ACERT technology
- Demonstrate the operation and adjustment of 3116, 3126, C7 & C9 fuel systems
- Correctly determine API fuel density
- Inspect 3116 unit injectors for damage
- Check and adjust 3116 and HEUI fuel settings
- Check and adjust 1.1 unit injector synchronization, rack setting and timing
- Evaluate how API fuel density affects performance
- Demonstrate the operation and adjustments of C15 and 3400-V fuel Systems.
- Check and adjust set point and low idle
- Check and adjust fuel settings
- Check injection tinting
- Test unit injectors and nozzles

Duration: 4 ½ days
Fee: $1,500.00 per participant

Suggested Self Study - Web based classes available in DPC

DPC course number 26917 - 7 Step Diagnostic Process Course
DPC course number 26915 - C15 ACERT Engine Performance Course
DPC course number 25946 - Engine Performance Diagnostic Exercise 21
DPC course number 26916 - C-9 Engine Performance Course
DPC course number 25906 - Engine Performance Diagnostic Exercise 18B
DPC course number 26848 - Cat 3116 Engine Performance Course
DPC course number 26949 - Cat 3406 and 3054 Engine Performance Course

Prerequisites - Instructor Led Courses

Electronics Troubleshooting I
Electronic Sensors and Control Logics

ENGINE DIAGNOSTICS

Objectives:

This course is an in-depth study of engine diagnostic and repair techniques. The majority of the class time is spent with hands-on activities, diagnosing and correcting engine problems. Upon completion, the participant will be able to:

- Explain the operating principals of the 3116, 3126; C-7, C-9 unit injector, and HEUI fuel systems
- Demonstrate the operation and adjustment of 3116, 3126, C-7 & C-9 fuel systems
- Perform basic mechanical troubleshooting
- Explain the use of diagnostic tools to perform basic troubleshooting on engine systems
- Measure and evaluate temperature and pressures throughout the lubrication system of an operating engine
- Measure and evaluate inlet and exhaust manifold pressures and temperatures
- Determine the effects on the engine set point and engine performance by changing fuel settings, high idle, and timing

Duration: 4 ½ days
Fee: $1,500.00 per participant

Suggested Self Study - Web based classes available in DPC

DPC course number 26915 - C15 ACERT Engine Performance Course
DPC course number 26266 - Engine Repair Diagnostic Exercise 17
DPC course number 26920 - Engine Performance Diagnostic Exercise 20
DPC course number 25946 - Engine Performance Diagnostic Exercise 21
DPC course number 26916 - C-9 Engine Performance Course
DPC course number 25906 - Engine Performance Diagnostic Exercise 18B
DPC course number 26848 - Cat 3116 Engine Performance Course
DPC course number 26949 - Cat 3406 and 3054 Engine Performance Course
DPC course number 25946 - Engine Performance Diagnostic Exercise 21
DPC course number 41134 - ER C01 - Cat Diesel Engines
DPC course number 40436 - ER C06 - Diesel Engine Crankshaft
DPC course number 41300 - ER C07 - Diesel Engine Front Gear Train
DPC course number 41301 - ER C09 - Diesel Engine Connecting Rod Assembly
DPC course number 41304 - ER C12 - Cat Diesel Engine Lubrication System
DPC course number 41305 - ER C13 - Cat Diesel Engine Oil Pumps

Prerequisite - Instructor Led Course

Electronics Troubleshooting I
Electronic Sensors and Control Logics
Fuel Systems Troubleshooting

C32 OPERATION, MAINTENANCE & ELECTRICAL

Objectives:

This course covers product information, air, lubrication, cooling, fuel, engine electronics and monitoring systems, as well as Electronic Technician (ET) software and hardware. Lab activities include the removal and installation of injectors, the installation of injector flash files, and valve and injector adjustments. This course also involves hands-on troubleshooting of a fully functioning C32 engine. Upon completion, the participant will be able to understand/do the following:

- Engine systems
- Basic operation, maintenance and troubleshooting on a C32
- Remove and install C32 unit injectors
- Be able to set valves and injectors on a C32
- Use monitoring systems and control panels
- Use Caterpillar ET program
- Read and decipher electronic codes
- Basic electronics of a C32

Duration: 2 ½ days
Fee: $1,250.00 per participant

D3500 A/B/C ENGINE OPERATION, MAINTENANCE & ELECTRICAL

Objectives:

This course covers air, lubrication, cooling and fuel engine systems. Lab activities include the Caterpillar software program, Electronic Technician, on the D3500 Series I & II engines. Upon completion, the participant will understand:

- Engine systems
- Basic maintenance and troubleshooting on D3500 electronic engine
- Be able to set valves and injectors on a D3500 engine
- Use the electronic instrument panel
- Use the Caterpillar ET program
- Read and decipher electronic codes
- Basic D3500 electronics

Duration: 2 ½ days
Fee: $1,250.00 per participant

Prerequisites - Instructor Led Courses

Electronics Troubleshooting I
Electronic Sensors and Control Logics
Engine Diagnostics

D3500 A/B/C ENGINE MASTER MECHANIC

Objectives:

The primary focus of this course is the planned maintenance and repairs for the Caterpillar 3500 A, B and C diesel engines. It involves hands-on iron activities covering troubleshooting techniques, operations and adjustments. Upon completion, the participant will be able to:

- Understand the operation principles and flow of 3500 engine systems for lubrication, cooling, fuel and air intake / exhaust
- Identify the differences between the 3500 A, B and C Series engines
- Accurately check and set the bridges, valves, injector heights and injector synchronization
- Disassemble and assemble the heads and pistons
- Demonstrate the ability to perform fuel quality (API) correction factors to determine the actual horsepower being produced by an engine
- Remove and install an after cooler, camshaft, and a turbocharger cartridge assembly
- Troubleshoot engine related iron problems

Duration: 4 ½ days
Fee: $2,400.00 per participant

Prerequisite - Instructor Led Course

D3500 A/B/C Engine Operation, Maintenance & Electrical

MCS (MARINE CLASS SOCIETY) ALARM AND PROTECTION SYSTEMS

Objectives:

This course provides technicians the ability to identify, operate, program using service tool, and troubleshoot MCS alarm and protection control systems as used on the following Marine society packaged generator sets:

- 3054/3056 MCS 0
- C4.4 Mech MCS 1
- C6.6 and C9 MCS 2
- C4.4 Mech and future C7.1 and C4.4E MCS 3

Upon completion, the participant will be able to:

- Identify the various MCS control panels utilized on 3054/3056/C4.4/C6.6/C7.1 and C9 Marine Gensets
- Understand the evolution, operation and function of the MCS control system
- Understand and operate service tools used to communicate with each control panel CAT USW 1 and CAT USW 3. Identify the correct service tool to use
- Understand and program control panels for each specific engine model, understand the importance of the file structure within the controller
- Diagnose faults related to engine wiring, control panel, and alarm and protection system

Prerequisites:

- Marine diesel engine technician level with prior knowledge of Marine Society packaged generator set packages
- AC/DC electrical knowledge required
- Basic PC skills

Duration: 2 ½ days
Fees: $1,200.00 per participant

MMS II & GMS II MONITORING SYSTEMS

Objectives:

The MMS II/GMS II Controls course provides an in-depth study and hands-on activities for installation, start-up, tuning, maintenance, and troubleshooting of the MMS II/GMS II controls. Upon completion, the participant will be able to:

- Perform upload and download programming utilizing a PC and memory card
- Setup the parameters in the MMS II/GMS II to match the engine and generator
- Identify the capabilities and functionality of the MMS II/GMS II
- Perform peripheral module programming associated with the MMS II/GMS II (these modules may include the Annunciator, Discrete I/O module, Thermocouple Module, and RTD Module)
- Understand the different components of the panels, such as Flex, PLC, Speed Switch, and the Panel View 1000 and their operation
- Understand the troubleshooting process for the panel and sensors
- Exhibit an understanding of the different communication protocols on the MMS II/GMS II

Duration: 2 ½ days
Fee: $1,200.00 per participant

C280 ENGINE MASTER MECHANIC

Objectives:

This course covers systems operation and teaches service procedures unique to the C280 diesel engine. Participants use the special tooling, Electronic Technician, to view and troubleshoot minor electrical problems with engine components. Upon completion, the participant will be able to:

- Understand basic operating principles of the C280 diesel engine systems
- Remove and install a cylinder head, piston, connecting rod and cylinder liner
- Remove and install a main bearing
- Adjust valves, valve bridges, and the unit injectors
- Have a basic understanding of the operation of unit injectors
- Explain the internal and external flow of engine coolant and lube oil
- Service the main and centrifugal oil filters

Duration: 4 ½ days
Fee: $2,200.00 per participant

D3600 MASTER MECHANIC*

Objectives:

This course is designed for those who have a good theoretical and practical understanding of diesel engines and mechanical procedures. Upon completion, the participant will be able to:

- Understand the basic operating principles of the 3600 Engine Components and Systems. Effectively use the Service Manual for making repairs
- Remove and install a cylinder head
- Remove and install a piston, connecting rod and cylinder liner
- Remove and install a main bearing
- Remove and install a camshaft segment and time the camshaft(s) to the crankshaft
- Adjust the valves and valve bridges
- Synchronize and time the unit injectors
- Check the rack stop setting and synchronize the governor or actuator to the engine
- Explain the internal and external flow of engine coolant and lube oil
- Service the main and centrifugal oil filters

Duration: 4 ½ days
Fee: $2,200.00 per participant

* **Caterpillar Certified Course - DPC Registration Required**

Prerequisites - Instructor Led Courses

Electronics Troubleshooting I
Electronic Sensors and Control Logics
Engine Diagnostics

GAS ENGINES I

Objectives:

This course focuses on the basic operating principles of gaseous fueled engines. Emphasis is on fuel systems, horsepower calculations, maintenance, intake and exhaust systems, and the timing and ignition system. Upon completion, the participant will be able to:

- Explain the operating principles of basic gaseous fueled engines
- Review the definitions of some common gas engine terms
- Perform cooling system, lubrication system, and fuel system maintenance
- Adjust and set the operating pressure of the adjustable waste gate
- Assess reusability of a diaphragm
- Perform a startup procedure

Duration: 4 ½ days
Fee: $2,200.00 per participant

Suggested Self Study - Web based classes available in DPC

DPC course number 26915 - C15 ACERT Engine Performance Course
DPC course number 26266 - Engine Repair Diagnostic Exercise 17
DPC course number 26920 - Engine Performance Diagnostic Exercise 20
DPC course number 25946 - Engine Performance Diagnostic Exercise 21
DPC course number 26916 - C-9 Engine Performance Course
DPC course number 25906 - Engine Performance Diagnostic Exercise 18B
DPC course number 26848 - Cat 3116 Engine Performance Course
DPC course number 26949 - Cat 3406 and 3054 Engine Performance Course
DPC course number 25946 - Engine Performance Diagnostic Exercise 21
DPC course number 41134 - ER C01 - Cat Diesel Engines
DPC course number 41135 - ER C02 – Diesel Engine Cylinder Block
DPC course number 41136 - ER C03 – Diesel Engine Cylinder Head Assembly
DPC course number 40434 - ER C04 – Diesel Engine Valve Train
DPC course number 40435 - ER C05 – Diesel Engine Camshaft
DPC course number 40436 - ER C06 - Diesel Engine Crankshaft
DPC course number 41300 - ER C07 - Diesel Engine Front Gear Train
DPC course number 40437 - ER C08 – Diesel Engine Piston Assembly
DPC course number 41301 - ER C09 - Diesel Engine Connecting Rod Assembly
DPC course number 41302 - ER C10 – Diesel Engine Cooling System and Radiator
DPC course number 41303 - ER C11 – Diesel Engine Cooling system Components
DPC course number 41304 - ER C12 - Cat Diesel Engine Lubrication System
DPC course number 41305 - ER C13 - Cat Diesel Engine Oil Pumps

GAS ENGINES II (G3300, G3400, G3500 Stoichiometric & Lean Burn Gas Engine Principles)

Objectives:

This course covers electrical systems and special considerations necessitated by low emissions gas engines – specifically the G3500 engine families. One day is spent reviewing stoichiometric principles. The remainder of the class is spent discussing principles of rich burn engines, the advanced wiring associated with the accompanying control systems, and doing tests and adjustments on a running G3508 Natural Gas engine. The effective use of Caterpillar service literature is practiced. Upon completion, the participant will be able to:

- Explain the effects of turbochargers, after coolers and exhaust bypass valve on engine performance
- Calculate the effects that altitude and temperature changes have on engine performance
- Calculate the minimum gas supply pressure requirement for gas engines with or without transient loads
- Calculate the Brake Specific Fuel Consumption (BSFC) for a given BTU fuel
- Understand the use of an exhaust free-oxygen emission analyzer to set exhaust oxygen/emissions
- Connect and properly use a computer with “Cat ET” to check and record the Customer Preferred Parameters and calibrate timing
- Explain the operation of the Engine Status Control Module (SCM) and its role in engine protection
- Explain the Caterpillar Electronic Ignition System (EIS) and how to troubleshoot it
- Explain how to do a self-test of the EIS using the proper testing harness

Duration: 4 ½ days
Fee: $2,200.00 per participant

Prerequisite - Instructor Led Course

Gas Engines I

G3600 MASTER MECHANIC*

Objectives:

This course is designed for those who have a good theoretical and practical understanding of gas fueled engines and correct mechanical procedures. Upon completion, the participant will be able to:

- Understand the basic operating principles of the G3600 engine mechanical systems
- Understand the need for filtration of fuel, air, and oil
- Remove and install a cylinder head
- Remove and install a piston, connecting rod, and cylinder liner
- Remove and install a main bearing
- Remove and install a camshaft segment and time the camshaft to the crankshaft
- Adjust engine valve bridges, engine valves, and gas admission valves
- Inspect a turbocharger and rotate housings for installation on a Vee engine
- Explain the internal and external flow of engine coolant and lube oil and explain temperature control of each system

Duration: 4 ½ days
Fee: $2,200.00 per participant

* **Caterpillar Certified Course - DPC Registration Required**

MERITOR SYSTEM FOR CT660 VOCATIONAL TRUCKS

Objectives:

This course is intended for Service Techs for the new Caterpillar Vocational CT660 Vocational Trucks utilizing the Meritor System. Upon completion, the participant will be able to:

- Will have the ability to troubleshoot / diagnose Meritor, Hendrickson, and Bendix product failures.
- Will have the fundamental knowledge of the Meritor Systems and components.
- Will have the ability to repair or oversee the repair of Meritor products.
- Will know where to go for repair and warranty assistance

Duration: 4 ½ days
Fee: $1,200.00 per participant

PL641 SERIES COMMUNICATION MODULES

Objectives:

This course will focus on the PLE641, PLE631, PLE601 Elite and PL641, PL631 Pro series Product Link hardware. This course prepares service personnel to perform multiple exercises including installation registration, and system troubleshooting. Upon completion, the participant will be able to:

- Install Elite and Pro series Product Link components Caterpillar equipment.
- Register installed Product Link Components to the User Interface.
- Access and download component information using Service Dashboard.
- Troubleshoot a variety of hardware and communication faults or issues.
- Configuration and setup
- Wiring interface

Duration: 2 days
Fee: $1,500.00 per participant

Prerequisites - Instructor Led Courses

Electronic Sensors and Control Logics

APPLIED FAILURE ANALYSIS (AFA) I

Objectives:

AFA I focuses on the basic principles of metallurgy, wear and fractures, and on managing the failure analysis process itself to arrive at the most probable root cause of failure. After instruction in these basics, students then learn to apply the fundamentals to the major engine components: Bearings, Crankshafts, Valves, Pistons, Rings, Liners, Connecting Rods, and Threaded Fasteners. Engine parts are generally lower in hardness than drivetrain components so their facts ("road signs") are easier to see ("read"). The course consists of classroom instruction and laboratory exercises, and concludes with case studies of failures that have occurred in the field. Learning objectives for this course include:

- Introduction to Applied Failure Analysis
- Management of Applied Failure Analysis
- Basic Metallurgy
- Basic Principles of Fractures
- Basic Principles of Wear
- Failure analysis of Engine Bearings
- Failure analysis of Crankshafts
- Failure analysis of Engine Valves
- Failure analysis of Pistons, Rings & Liners
- Failure analysis of Connecting Rods
- Case studies

Duration: 4 1/2 days
Fee: $1,750.00 per participant

* **Caterpillar Certified Course - DPC Registration Required**

Prerequisites - Web based classes in DPC

DPC course number 33400 – Intro to AFA Management
DPC course number 33407 – Intro to AFA Metallurgy
DPC course number 33403 – Intro to AFA Principles of Fracture
DPC course number 33402 – Intro to AFA Principles of Wear
DPC course number 33401 – Intro to AFA Visual Examination

APPLIED FAILURE ANALYSIS (AFA) II/III

Objectives:

AFA II and III have been combined into a single week of training. This course begins with a review of basic principles covered in AFA I. Then students apply those principles to gears, anti-friction bearings, hydraulic pumps & motors, lubrication, welds, and shafts. Communicating a failure analysis is more strongly emphasized by including a section on taking good digital pictures. The week is wrapped up with case studies from the field. Learning objectives for this course include:

- Review of Management
- Review of Fractures
- Review of Wear
- Failure analysis of Gears
- Failure analysis of Anti-friction Bearings
- Failure analysis of Threaded Fasteners
- Failure analysis of Hydraulic Pumps & Motors
- Case studies

Duration: 4 1/2 days
Fee: $1,750.00 per participant

*** Caterpillar Certified Course - DPC Registration Required**

Prerequisites - Instructor Led Courses

AFA I

Fundamentals of Brakes

Objectives:

This course reviews the Meritor Cam Brake Components for the Q, Q Plus, including LX500 and MX500, Cast Plus and P Series brakes. Learning objectives for this course include:

- Disassembly
- Inspection
- Assembly

Duration: 2 1/2 days
Fee: $750.00 per participant

C175 ENGINE TRAINING

Objectives:

This course will teach the CAT C175 Diesel Engine electronic systems, related wiring harness, component hardware and the use of Electronic Technician (ET) on the engine electronic control systems. Emphasis is being placed with hands on diagnostic works on C175 Diesel Engine. The correct use of Caterpillar service literature will be discussed. Learning objectives for this course include:

- Recognize engine electronic components and their functions
- Describe C175 Software features and configurations
- Use Electronic Technician (ET) to diagnose problems, configure engine parameters, monitor system and make data logging
- Calibrate and Adjust electronic engine component
- Troubleshoot electronic system, differentiating electrical hardware and harness problems from electronic problems
- Diagnose and ratify intermittent electrical problems

Duration: 4 1/2 days
Fee: $2,150.00 per participant

Prerequisites - Instructor Led Courses

Electronic Troubleshooting I
Electronic Sensors and Control Logics

Lodging Options

NEW IBERIA AREA HOTELS

Lodging, meals and transportation are not included in course fees.

- **Hampton Inn & Suites**
  400 Spanish Towne Boulevard
  New Iberia, Louisiana, 70560
  Tel: +1-337-321-6700
  Fax: 1-337-321-6659

- **Ramada New Iberia**
  2915 Highway 14
  New Iberia, LA 70560
  Tel: +1-337-367-1201
  **Provides shuttle to/from airport and breakfast*

- **Holiday Inn Express**
  318 West Hwy 90 Frontage Road,
  New Iberia, LA 70560
  Tel: +1-337-408-2700
  **Provides shuttle to/from airport and breakfast*

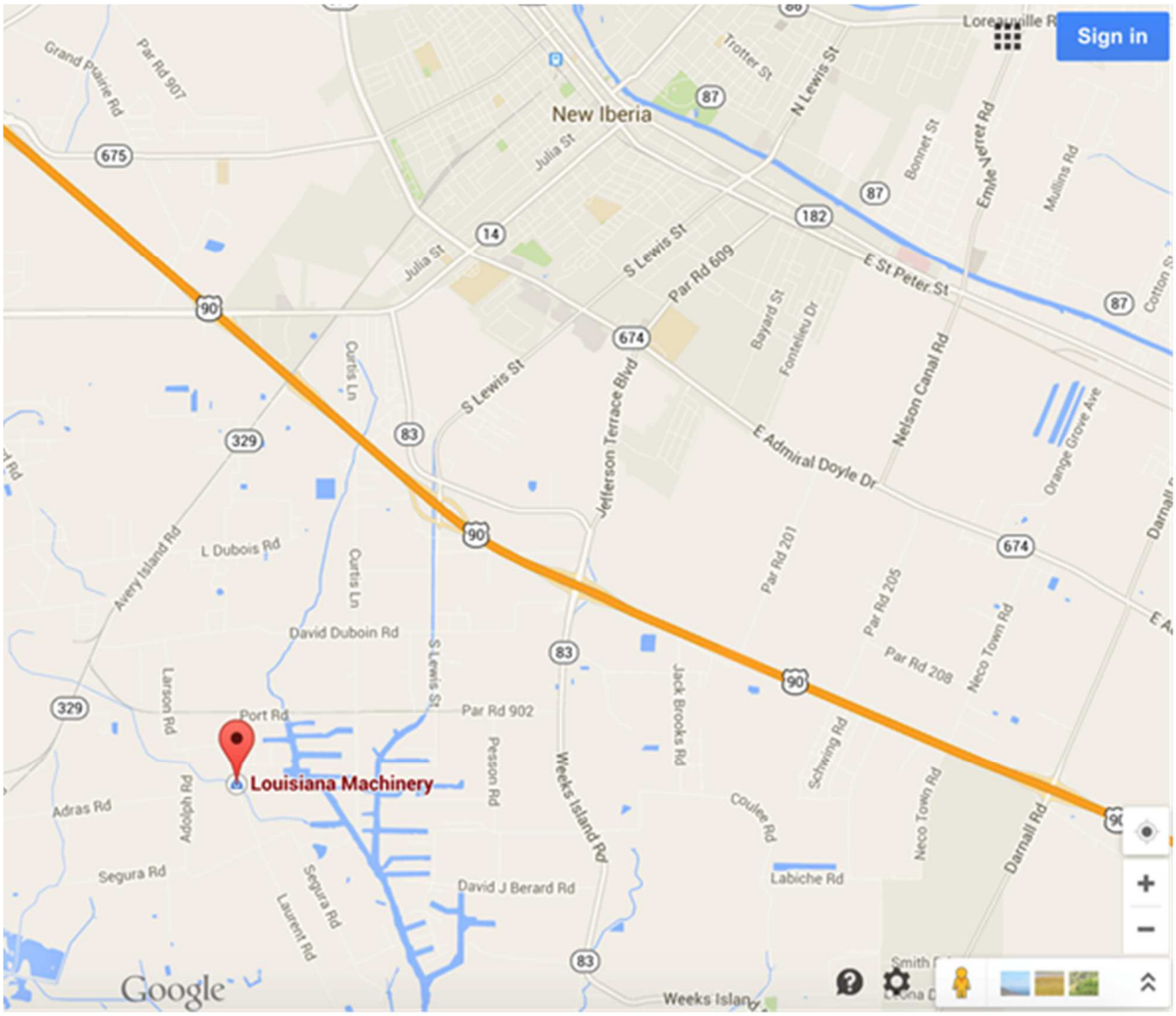
NEW IBERIA/ LAFAYETTE AIRPORT

Lafayette Regional Airport (LFT)
American Eagle
Delta Connection
United Express

NEW IBERIA / LAFAYETTE CAR RENTAL

Alamo	Avis	Budget
Hertz	National	Enterprise

NEW IBERIA AREA MAP



Louisiana Cat
New Iberia
6111 Port Rd
New Iberia, LA 70560
Phone: (337) 374-1901
Fax: (337) 374-1914

LAFAYETTE / BROUSSARD AREA HOTELS

Lodging, meals and transportation are not included in course fees.

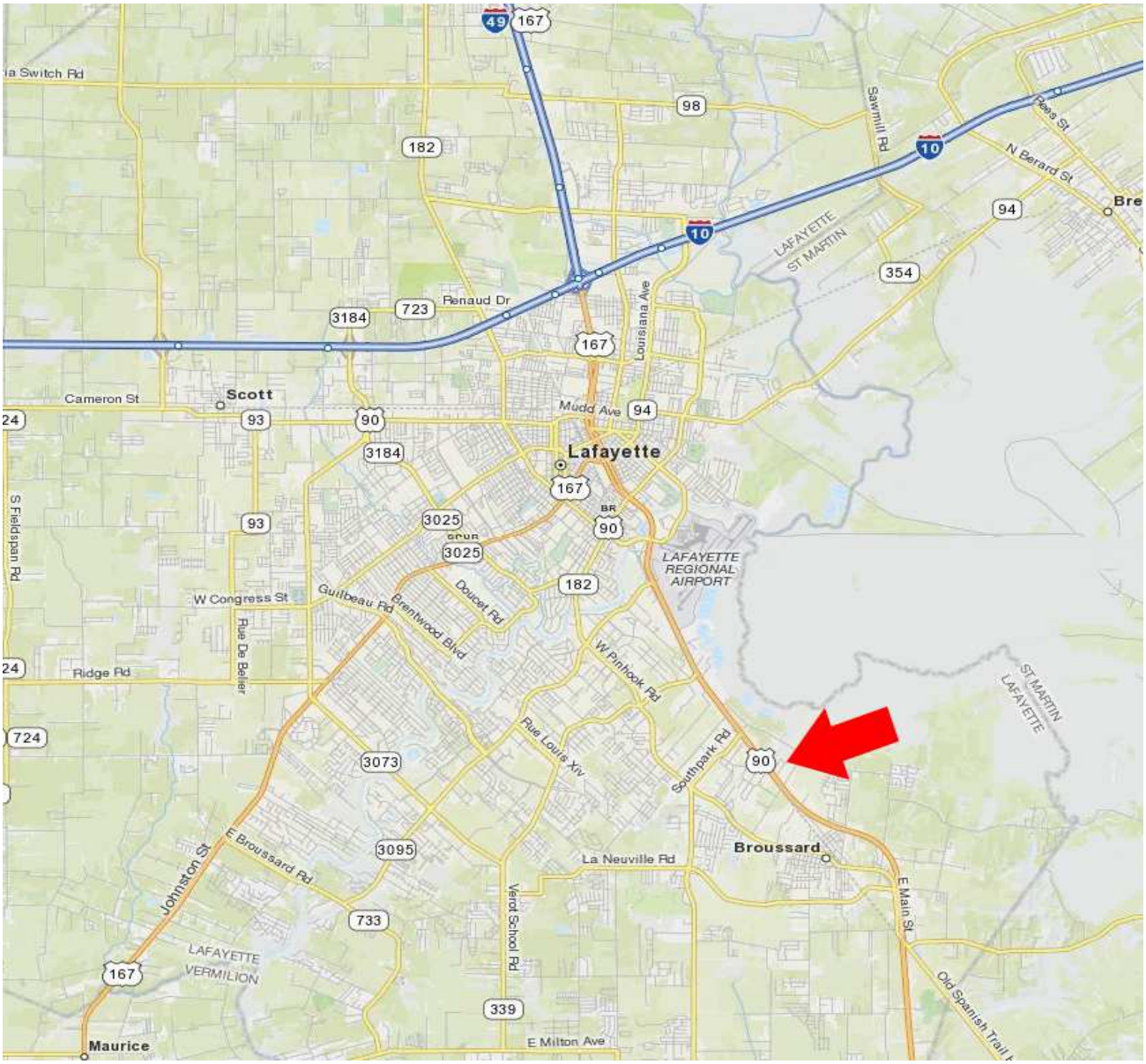
- **Homewood Suites by Hilton**
  201 Kaliste Saloom Rd.
  Lafayette, LA 70508
  (337) 264-6044

  * Complimentary breakfast
  * Complimentary dinner, Monday through Thursday
  * Swimming pool, fitness center, basketball court
  * **Louisiana Cat Corporate Rate** via

http://homewoodsuites.hilton.com/en/hw/reservations/index.jhtml?hotel=LFTKSHW&corporateCode=0560053070

- **Wingate by Wyndham**
  702 East Kaliste Saloom Rd.
  Lafayette, LA 70508
  (337) 234-3700 phone
  (866) 434-0298 reservations

LAFAYETTE / BROUSSARD AREA MAP



Louisiana Cat
Lafayette
100 Boyce Dr., Hwy 90 East
Lafayette, LA 70518
(337) 837-2476 Tel
(337) 837-1486 Fax

MORGAN CITY AREA HOTELS

Lodging, meals and transportation are not included in course fees.

- **Holiday Inn**
  520 Roderick St.
  Morgan City, LA 70380
  (985) 385-2200 phone
  (888) 465-4329 reservations

  * Complimentary breakfast
  * Complimentary access to an off-site Health/Fitness Center

- **La Quinta Inn & Suites**
  2018 Allison St.
  Morgan City, LA 70380
  (985) 300-0200 phone

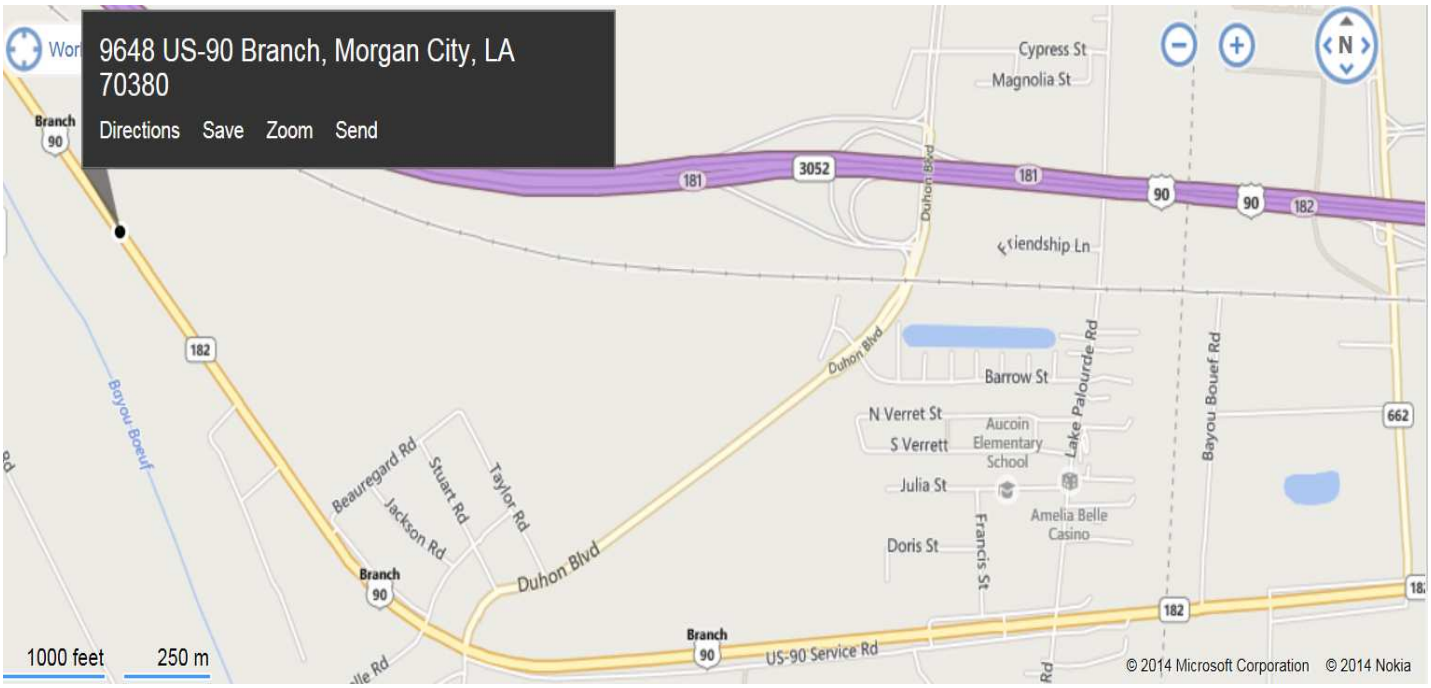
MORGAN CITY AIRPORT

LOUIS ARMSTRONG – NEW ORLEANS INTERNATIONAL (MSY)
American Airlines
Delta Airlines
Jet Blue
Southwest Airlines
United Airlines
US Airways

MORGAN CITY CAR RENTAL

Alamo	Avis	Budget
Hertz	National	Enterprise

MORGAN CITY AREA MAP



Louisiana Cat
Morgan City
9648 Hwy 182 East
Morgan City, LA 70380
(985) 631-0561 Tel
(985) 631-0567 Fax